

# INTERNATIONAL SEARCH REPORT

PCT/GB2004/005266

| <b>A. CLASSIFICATION OF SUBJECT MATTER</b><br>IPC 7 C12N9/24 C12N9/26 C12P19/04   |   |  |
|---|---|--|
| According to International Patent Classification (IPC) or to both national classification and IPC   |   |  |
| <b>B. FIELDS SEARCHED</b><br>Minimum documentation searched (classification system followed by classification symbols)<br>IPC 7 C12N  |   |  |
| Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched   |   |  |
| Electronic data base consulted during the international search (name of data base and, where practical, search terms used)<br>EPO-Internal, EMBASE, WPI Data, PAJ   |   |  |
| <b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>   |   |  |
| Category *  | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No.  |
| X   | EP 1 211 320 A (UNIVERSITY OF BRITISH COLUMBIA) 5 June 2002 (2002-06-05)<br>page 4, lines 10-14, 49-51<br>-----   | 1-14   |
| X   | MAYER C ET AL: "Directed evolution of new glycosynthases from Agrobacterium beta-glucosidase: a general screen to detect enzymes for oligosaccharide synthesis"<br>CHEMISTRY AND BIOLOGY, CURRENT BIOLOGY, LONDON, GB,<br>vol. 8, no. 5, May 2001 (2001-05), pages 437-443, XP002273567<br>ISSN: 1074-5521<br>pages 439-440<br>-----<br>--/-- | 1-14   |
| <input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.   |   |  |
| * Special categories of cited documents :<br>*A* document defining the general state of the art which is not considered to be of particular relevance<br>*E* earlier document but published on or after the international filing date<br>*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)<br>*O* document referring to an oral disclosure, use, exhibition or other means<br>*P* document published prior to the international filing date but later than the priority date claimed<br>*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention<br>*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone<br>*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.<br>*&* document member of the same patent family |   |  |
| Date of the actual completion of the international search<br>1 March 2005   |   | Date of mailing of the international search report<br>14/03/2005 |
| Name and mailing address of the ISA<br>European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel (+31-70) 340-2040, Tx. 31 651 epo nl,<br>Fax (+31-70) 340-3016  |   | Authorized officer<br>Roscoe, R                                  |

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| C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT |  |                       |
|--|--|-----------------------|
| Category *   | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
| X  | <p>WITHERS S G ET AL: "Mechanistic consequences of mutation of the active site nucleophile Glu 358 in Agrobacterium 'beta!-glucosidase"</p> <p>BIOCHEMISTRY 1992 UNITED STATES, vol. 31, no. 41, 1992, pages 9979-9985, XP002319500</p> <p>ISSN: 0006-2960</p> <p>the whole document</p>   | 1-14                  |
| X  | <p>VOORHORST WILFRIED G B ET AL: "Characterization of the celB gene coding for beta-glucosidase from the hyperthermophilic archaeon Pyrococcus furiosus and its expression and site-directed mutation in Escherichia coli"</p> <p>JOURNAL OF BACTERIOLOGY, WASHINGTON, DC, US, vol. 177, no. 24, 1995, pages 7105-7111, XP002159355</p> <p>ISSN: 0021-9193</p> <p>the whole document</p> | 1-14                  |
| A  | <p>WITHERS S G: "Mechanisms of glycosyl transferases and hydrolases"</p> <p>CARBOHYDRATE POLYMERS, APPLIED SCIENCE PUBLISHERS, LTD. BARKING, GB, vol. 44, no. 4, April 2001 (2001-04), pages 325-337, XP004314871</p> <p>ISSN: 0144-8617</p> <p>the whole document</p>   |                       |
| X,L  | <p>LAWSON S L ET AL: "Mechanistic consequences of replacing the active-site nucleophile Glu-358 in Agrobacterium sp. beta-glucosidase with a cysteine residue."</p> <p>THE BIOCHEMICAL JOURNAL. 15 FEB 1998, vol. 330 ( Pt 1), 15 February 1998 (1998-02-15), pages 203-209, XP001205446</p> <p>ISSN: 0264-6021</p> <p>the whole document</p>  | 1-14                  |
| X<br>L   | <p>Demonstrates that the meaning of a non-nucleophilic residue is ambiguous. In this document, Asp and Gln are incapable of functioning as nucleophiles. Contrast with appl. p.8, 1.7-28</p> <p>page 203, column 2</p> <p style="text-align: center;">-----<br/>-/-</p>  | 1-14<br>1,2,4-14      |

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| C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT |  |                       |
|--|--|-----------------------|
| Category *   | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
| A  | <p>CORBETT K ET AL: "Tailoring the substrate specificity of the beta-glycosidase from the thermophilic archaeon Sulfolobus solfataricus"</p> <p>FEBS LETTERS, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 509, no. 3, 14 December 2001 (2001-12-14), pages 355-360, XP004327002</p> <p>ISSN: 0014-5793</p> <p>the whole document</p> <p>-----</p> | 6-8                   |

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## Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the International application and necessary to the claimed invention, the International search was carried out on the basis of:
  - a. type of material
    - ☒ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material
    - ☒ in written format
    - ☒ in computer readable form
  - c. time of filing/furnishing
    - ☒ contained in the international application as filed
    - ☒ filed together with the international application in computer readable form
    - ☐ furnished subsequently to this Authority for the purpose of search
2. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
3. Additional comments:

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| Patent document<br>cited in search report |   | Publication<br>date | Patent family<br>member(s) |              | Publication<br>date |
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| EP 1211320                                | A | 05-06-2002          | CA                         | 2165041 A1   | 13-06-1997          |
|   |   |                     | AT                         | 220720 T     | 15-08-2002          |
|   |   |                     | AU                         | 722220 B2    | 27-07-2000          |
|   |   |                     | AU                         | 1135497 A    | 03-07-1997          |
|   |   |                     | CA                         | 2238966 A1   | 19-06-1997          |
|   |   |                     | WO                         | 9721822 A2   | 19-06-1997          |
|   |   |                     | DE                         | 69622429 D1  | 22-08-2002          |
|   |   |                     | DE                         | 69622429 T2  | 28-11-2002          |
|   |   |                     | EP                         | 1211320 A2   | 05-06-2002          |
|   |   |                     | EP                         | 0870037 A2   | 14-10-1998          |
|   |   |                     | JP                         | 2000501607 T | 15-02-2000          |